

SEQUENCE LISTING

<110> MIDOH, Naoki
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<120> Cyclic Depsipeptide Synthetase And Gene Thereof, And Mass Production System For Cyclic Depsipeptide

<130> 2002-0317A/LC/00144

<140> 10/070,387

<141> 2002-03-06

<150> JP 253040/1999

<151> 1999-09-07

<150> JP 104291/2000

<151> 2000-04-06

<160> 21

<170> PatentIn Ver. 2.1

<210> 1

<211> 9633

<212> DNA

<213> Mycelia sterilia

<220>

<221> CDS

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<223> peptide synthetase for PF1022

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Asn Pro Leu Ala Gln Leu Thr Phe Ala Leu His Ser Gln Gln Asp Leu	
1440 1445 1450	
ggc aag ttc gag ctg gag ggt ctc gta gcg gaa ccc gtc tcg aac aag	4416
Gly Lys Phe Glu Leu Glu Gly Leu Val Ala Glu Pro Val Ser Asn Lys	
1455 1460 1465	
gta tac acc agg ttc gac gtg gag ttt cac ctg ttc caa gaa gcc gga	4464
Val Tyr Thr Arg Phe Asp Val Glu Phe His Leu Phe Gln Glu Ala Gly	
1470 1475 1480	
aga cta agc ggt aac gtg gca ttt gcg gca gat cta ttc aag cct gag	4512
Arg Leu Ser Gly Asn Val Ala Phe Ala Ala Asp Leu Phe Lys Pro Glu	
1485 1490 1495 1500	
acc att agc aat gta gtc gcc ata ttt ttc caa atc ctg cga caa ggc	4560
Thr Ile Ser Asn Val Val Ala Ile Phe Phe Gln Ile Leu Arg Gln Gly	
1505 1510 1515	
att cgc cag cct cgg act cca atc gct gtt ctc ccg ctt acc gat ggg	4608
Ile Arg Gln Pro Arg Thr Pro Ile Ala Val Leu Pro Leu Thr Asp Gly	
1520 1525 1530	
tta gcg gac ctt cgt gcc atg ggc ttg ctt gag atc gag aag gca gaa	4656
Leu Ala Asp Leu Arg Ala Met Gly Leu Leu Glu Ile Glu Lys Ala Glu	
1535 1540 1545	
tac ccg cgg gag tcg agc gtc gtc gac gtc ttc cgc aag cag gtg gcc	4704
Tyr Pro Arg Glu Ser Ser Val Val Asp Val Phe Arg Lys Gln Val Ala	
1550 1555 1560	
gct cac ccg cac gct ttt gcc gtt gtc gat tcg gca tcg cgc ctc aca	4752
Ala His Pro His Ala Phe Ala Val Val Asp Ser Ala Ser Arg Leu Thr	
1565 1570 1575 1580	
tat gct gat ctc gat cgt caa tcc gat caa ctc gcg acc tgg ctc ggt	4800
Tyr Ala Asp Leu Asp Arg Gln Ser Asp Gln Leu Ala Thr Trp Leu Gly	
1585 1590 1595	
cgg cgc aat atg acg gct gag acg ctg gtc ggg gtg tta gca ccg cgg	4848
Arg Arg Asn Met Thr Ala Glu Thr Leu Val Gly Val Leu Ala Pro Arg	
1600 1605 1610	
tca tgt caa aca gtt gtt gcc att tta ggt atc ctg aaa gcg aat ctc	4896
Ser Cys Gln Thr Val Val Ala Ile Leu Gly Ile Leu Lys Ala Asn Leu	
1615 1620 1625	
gca tat ctc ccg ctt gat gtg aat tgt cct acc gcc cgc ctg caa aca	4944
Ala Tyr Leu Pro Leu Asp Val Asn Cys Pro Thr Ala Arg Leu Gln Thr	
1630 1635 1640	
atc cta tct aca ttg aat cgg cac aag ttg gtc cta ctc ggc tct aac	4992

Ile	Leu	Ser	Thr	Leu	Asn	Arg	His	Lys	Leu	Val	Leu	Gly	Ser	Asn	
1645					1650				1655					1660	
gca	act	act	ccg	gat	gtc	cag	ata	cct	gat	gta	gag	ctg	gta	cga	atc
Ala	Thr	Thr	Pro	Asp	Val	Gln	Ile	Pro	Asp	Val	Glu	Leu	Val	Arg	Ile
			1665					1670					1675		5040
agc	gat	atc	tta	gat	cgc	ccc	atc	aat	ggc	cag	gca	aag	cta	aat	ggc
Ser	Asp	Ile	Leu	Asp	Arg	Pro	Ile	Asn	Gly	Gln	Ala	Lys	Leu	Asn	Gly
		1680					1685					1690			5088
cat	aca	aaa	tcg	aat	ggc	tac	tca	aag	cca	aac	ggc	tat	acg	cat	ctg
His	Thr	Lys	Ser	Asn	Gly	Tyr	Ser	Lys	Pro	Asn	Gly	Tyr	Thr	His	Leu
	1695					1700					1705				5136
aaa	ggc	tat	tca	aac	cta	aac	ggc	tat	tca	aaa	caa	aat	ggc	tat	gca
Lys	Gly	Tyr	Ser	Asn	Leu	Asn	Gly	Tyr	Ser	Lys	Gln	Asn	Gly	Tyr	Ala
	1710				1715					1720					5184
caa	ctc	aac	ggc	cat	aga	gag	cgt	aac	aat	tat	tta	gat	cta	aat	ggg
Gln	Leu	Asn	Gly	His	Arg	Glu	Arg	Asn	Asn	Tyr	Leu	Asp	Leu	Asn	Gly
1725			1730					1735						1740	5232
cac	tca	ctg	cta	aat	ggg	aat	tca	gac	atc	acc	aca	tca	ggg	ccc	tca
His	Ser	Leu	Leu	Asn	Gly	Asn	Ser	Asp	Ile	Thr	Thr	Ser	Gly	Pro	Ser
		1745						1750					1755		5280
gca	aca	agc	ctt	gcc	tac	gtg	atc	ttc	aca	tcc	ggc	tca	acc	gga	aag
Ala	Thr	Ser	Leu	Ala	Tyr	Val	Ile	Phe	Thr	Ser	Gly	Ser	Thr	Gly	Lys
		1760				1765						1770			5328
ccc	aaa	gga	gtc	atg	gtc	gaa	cac	cgc	agc	atc	atc	cga	ctt	gca	aag
Pro	Lys	Gly	Val	Met	Val	Glu	His	Arg	Ser	Ile	Ile	Arg	Leu	Ala	Lys
	1775					1780					1785				5376
aag	aac	aga	atc	ata	tcc	agg	ttc	cca	tct	gta	gcc	aag	gta	gct	cac
Lys	Asn	Arg	Ile	Ile	Ser	Arg	Phe	Pro	Ser	Val	Ala	Lys	Val	Ala	His
	1790				1795			1800							5424
ctc	tca	aac	atc	gcc	ttt	gac	gcc	gcc	act	tgg	gaa	atg	ttc	gca	gcc
Leu	Ser	Asn	Ile	Ala	Phe	Asp	Ala	Ala	Thr	Trp	Glu	Met	Phe	Ala	Ala
1805			1810					1815						1820	5472
ctt	cta	aac	ggc	gga	acg	ctg	gtc	tgt	atc	gac	tat	atg	acc	acc	ctg
Leu	Leu	Asn	Gly	Gly	Thr	Leu	Val	Cys	Ile	Asp	Tyr	Met	Thr	Thr	Leu
		1825				1830						1835			5520
gac	agc	aaa	acg	ctc	gag	gcc	gcg	ttt	gca	cga	gaa	caa	atc	aac	gcc
Asp	Ser	Lys	Thr	Leu	Glu	Ala	Ala	Phe	Ala	Arg	Glu	Gln	Ile	Asn	Ala
	1840					1845					1850				5568
gcg	tta	ctc	acg	ccc	gct	ttg	ttg	aag	cag	tgc	cta	gcc	aac	att	ccc
Ala	Leu	Leu</													

1870	1875	1880	
gac ggc caa gac gcg atc gca gca cat gcg ctt gtc ggt gct ggc gtg Asp Gly Gln Asp Ala Ile Ala Ala His Ala Leu Val Gly Ala Gly Val 1885 1890 1895 1900	5712		
tat aat gcg tat ggc ccg acc gaa aac gga gtg atc agt acg att tat Tyr Asn Ala Tyr Gly Pro Thr Glu Asn Gly Val Ile Ser Thr Ile Tyr 1905 1910 1915	5760		
aat atc act aaa aac gac tcg ttc atc aac gga gtc ccc atc ggc tgt Asn Ile Thr Lys Asn Asp Ser Phe Ile Asn Gly Val Pro Ile Gly Cys 1920 1925 1930	5808		
gca atc agc aat tcc ggc gcc tac atc aca gac cca gac cag cag ctc Ala Ile Ser Asn Ser Gly Ala Tyr Ile Thr Asp Pro Asp Gln Gln Leu 1935 1940 1945	5856		
gta cct cct ggc gtc atg ggt gaa ctc gtc gtt acc ggt gac ggg ctc Val Pro Pro Gly Val Met Gly Glu Leu Val Val Thr Gly Asp Gly Leu 1950 1955 1960	5904		
gcg cgg ggg tat aca gac cca gca cta gac gcg ggc cgc ttc gtc cag Ala Arg Gly Tyr Thr Asp Pro Ala Leu Asp Ala Gly Arg Phe Val Gln 1965 1970 1975 1980	5952		
atc atg atc aat gac aag gcc gtg agg gcg tac cga acg ggt gac cgg Ile Met Ile Asn Asp Lys Ala Val Arg Ala Tyr Arg Thr Gly Asp Arg 1985 1990 1995	6000		
gca cga tat cgc gta gga gac ggt cag atc gag ttc ttc gga cgc atg Ala Arg Tyr Arg Val Gly Asp Gly Gln Ile Glu Phe Phe Gly Arg Met 2000 2005 2010	6048		
gat cag caa gtc aag atc cga ggt cac cgc att gaa cca gcc gaa gtg Asp Gln Gln Val Lys Ile Arg Gly His Arg Ile Glu Pro Ala Glu Val 2015 2020 2025	6096		
gag cgt gct att ctc gac caa gac tcg gcc cgc gac gcc gtc gtt gtc Glu Arg Ala Ile Leu Asp Gln Asp Ser Ala Arg Asp Ala Val Val Val 2030 2035 2040	6144		
atc cgg cac caa gaa ggt gaa gaa ccg gag atg gtt ggt ttc gtc gcg Ile Arg His Gln Glu Gly Glu Glu Pro Glu Met Val Gly Phe Val Ala 2045 2050 2055 2060	6192		
acc cac ggc gat cac tct gcc gaa caa gag gaa gca gac gac cag gtt Thr His Gly Asp His Ser Ala Glu Gln Glu Glu Ala Asp Asp Gln Val 2065 2070 2075	6240		
gaa ggt tgg aaa gac ttc ttc gag agc aat aca tat gcc gac atg gat Glu Gly Trp Lys Asp Phe Phe Glu Ser Asn Thr Tyr Ala Asp Met Asp 2080 2085 2090	6288		
acc atc ggc cag tct gct ata ggc aac gac ttt acg ggc tgg acg tcc Thr Ile Gly Gln Ser Ala Ile Gly Asn Asp Phe Thr Gly Trp Thr Ser 2095 2100 2105	6336		

atg tac gac ggg agc gag atc aac aag gcc gag atg cag gag tgg ctc Met Tyr Asp Gly Ser Glu Ile Asn Lys Ala Glu Met Gln Glu Trp Leu 2110 2115 2120	6384
gac gac acc atg cgc aca ctc ctc gat ggc caa gcg ccg ggt cac gta Asp Asp Thr Met Arg Thr Leu Leu Asp Gly Gln Ala Pro Gly His Val 2125 2130 2135 2140	6432
ctc gaa ata ggc aca ggc agt ggc atg gta ttg ttt aac tta ggg gcc Leu Glu Ile Gly Thr Gly Ser Gly Met Val Leu Phe Asn Leu Gly Ala 2145 2150 2155	6480
ggg cta caa agc tac gta ggt ctt gaa cca tct aga tct gca gcc acg Gly Leu Gln Ser Tyr Val Gly Leu Glu Pro Ser Arg Ser Ala Ala Thr 2160 2165 2170	6528
ttt gtt acc aaa gcg atc aat tcc acc cca gct ctt gca gga aag gcc Phe Val Thr Lys Ala Ile Asn Ser Thr Pro Ala Leu Ala Gly Lys Ala 2175 2180 2185	6576
gaa gtg cac gtc ggc aca gcg aca gac ata aac cga ctt cgt gga ctt Glu Val His Val Gly Thr Ala Thr Asp Ile Asn Arg Leu Arg Gly Leu 2190 2195 2200	6624
cgt ccc gat cta gtt gtg ctc aac tcg gta gtc cag tat ttc ccc acg Arg Pro Asp Leu Val Val Leu Asn Ser Val Val Gln Tyr Phe Pro Thr 2205 2210 2215 2220	6672
ccc gag tac cta cta gag gtc gtg gag agt ctc gtc cgg att ccg ggc Pro Glu Tyr Leu Leu Glu Val Val Glu Ser Leu Val Arg Ile Pro Gly 2225 2230 2235	6720
gtc aag cgc gtg gtc ttc ggc gac ata cga tct cac gcc acg aac aga Val Lys Arg Val Val Phe Gly Asp Ile Arg Ser His Ala Thr Asn Arg 2240 2245 2250	6768
cat ttt ctt gct gcc agg gcg ctg cat tcg ctg ggc tcc aag gcg acc His Phe Leu Ala Ala Arg Ala Leu His Ser Leu Gly Ser Lys Ala Thr 2255 2260 2265	6816
aaa gat gct ata cgt caa aag atg acg gag atg gaa gag cgc gag gaa Lys Asp Ala Ile Arg Gln Lys Met Thr Glu Met Glu Glu Arg Glu Glu 2270 2275 2280	6864
gag ctg ctc gtc gac ccg gcc ttc ttc acg gcg ctg ctg cag ggc cag Glu Leu Leu Val Asp Pro Ala Phe Phe Thr Ala Leu Leu Gln Gly Gln 2285 2290 2295 2300	6912
ctt gcc gat cga atc aag cac gtc gag atc ctc ccg aag aac atg cgc Leu Ala Asp Arg Ile Lys His Val Glu Ile Leu Pro Lys Asn Met Arg 2305 2310 2315	6960
gcc acg aac gag ctg agc gcg tac cgg tat aca gcc gtc att cac gta Ala Thr Asn Glu Leu Ser Ala Tyr Arg Tyr Thr Ala Val Ile His Val 2320 2325 2330	7008
cgc ggc cca gag gaa cag tcg cgg ccc gtg tat ccg atc caa gtg aac	7056

Arg Gly Pro Glu Glu Gln Ser Arg Pro Val Tyr Pro Ile Gln Val Asn	
2335 2340 2345	
gac tgg atc gac ttt cag gcc tca cgc att gac cgc cgc gcc ctt ctc	7104
Asp Trp Ile Asp Phe Gln Ala Ser Arg Ile Asp Arg Arg Ala Leu Leu	
2350 2355 2360	
cga ctc cta cag cgc tcg gca gac gcc gcg acc gtc gcc gtc agc aac	7152
Arg Leu Leu Gln Arg Ser Ala Asp Ala Ala Thr Val Ala Val Ser Asn	
2365 2370 2375 2380	
atc ccc tac agc aag acg att gta gaa cgc cat gtc gtc gag tcc ctt	7200
Ile Pro Tyr Ser Lys Thr Ile Val Glu Arg His Val Val Glu Ser Leu	
2385 2390 2395	
gac aat aac aac agg gag aat acg cat aga gca cca gac ggc gcg gct	7248
Asp Asn Asn Asn Arg Glu Asn Thr His Arg Ala Pro Asp Gly Ala Ala	
2400 2405 2410	
tgg atc tcg gcc gtc cgc tcc aag gcc gag cgc tgc acg tcc ctc tcc	7296
Trp Ile Ser Ala Val Arg Ser Lys Ala Glu Arg Cys Thr Ser Leu Ser	
2415 2420 2425	
gtg acc gat ctt gtg cag ctc ggg gaa gaa gcc ggc ttt cgc gta gaa	7344
Val Thr Asp Leu Val Gln Leu Gly Glu Glu Ala Gly Phe Arg Val Glu	
2430 2435 2440	
gtc agc gca gcg cgg cag tgg tct caa agc ggc gcg ctc gat gcc gtc	7392
Val Ser Ala Ala Arg Gln Trp Ser Gln Ser Gly Ala Leu Asp Ala Val	
2445 2450 2455 2460	
ttt cac cgc tat aat ttg ccc act caa agc aat agt cgc gtt ctg att	7440
Phe His Arg Tyr Asn Leu Pro Thr Gln Ser Asn Ser Arg Val Leu Ile	
2465 2470 2475	
cag ttc cct acc gaa gat ggc cag acg cga aga tcc gcc act ctg aca	7488
Gln Phe Pro Thr Glu Asp Gly Gln Thr Arg Arg Ser Ala Thr Leu Thr	
2480 2485 2490	
aac cga cca cta cag cgt ctg cag agc cgt cgg ttc gca tca cag atc	7536
Asn Arg Pro Leu Gln Arg Leu Gln Ser Arg Arg Phe Ala Ser Gln Ile	
2495 2500 2505	
cgc gaa cag ctg aag gcc gtg ctc ccg tca tac atg atc ccc tcc cgc	7584
Arg Glu Gln Leu Lys Ala Val Leu Pro Ser Tyr Met Ile Pro Ser Arg	
2510 2515 2520	
atc gtg gtc ata gac cag atg cct ctc aat gcc aat ggc aag gtc gac	7632
Ile Val Val Ile Asp Gln Met Pro Leu Asn Ala Asn Gly Lys Val Asp	
2525 2530 2535 2540	
cgg aaa gaa ctt acc aga agg gcc caa atc gcg ccg aaa tct cag gcg	7680
Arg Lys Glu Leu Thr Arg Arg Ala Gln Ile Ala Pro Lys Ser Gln Ala	
2545 2550 2555	
gct ccc gcc aaa ccc gtc aaa cag gtc gat ccg ttc gtc aac ctg gaa	7728
Ala Pro Ala Lys Pro Val Lys Gln Val Asp Pro Phe Val Asn Leu Glu	

2560	2565	2570	
gcc att tta tgt gag gag ttc gcg gag gtg ctg ggc atg gaa gtc ggc			7776
Ala Ile Leu Cys Glu Glu Phe Ala Glu Val Leu Gly Met Glu Val Gly			
2575	2580	2585	
gtg aac gac cac ttc ttc caa cta ggc gga cac tct ctc ttg gcc acg			7824
Val Asn Asp His Phe Phe Gln Leu Gly Gly His Ser Leu Leu Ala Thr			
2590	2595	2600	
aag ctc gtc gcg cgt ctc agt cgt cgg cta aac ggt cgt gtg tct gtg			7872
Lys Leu Val Ala Arg Leu Ser Arg Arg Leu Asn Gly Arg Val Ser Val			
2605	2610	2615	2620
agg gat gtg ttc gac cag cct gtg att tcc gac ctc gca gtc acc ctc			7920
Arg Asp Val Phe Asp Gln Pro Val Ile Ser Asp Leu Ala Val Thr Leu			
2625	2630	2635	
cgc cag gga ctg acc ttg gaa aac gcc att ccc gca acg ccg gac agc			7968
Arg Gln Gly Leu Thr Leu Glu Asn Ala Ile Pro Ala Thr Pro Asp Ser			
2640	2645	2650	
ggg tat tgg gag cag aca atg tcc gca ccg aca acc ccg agc gac gac			8016
Gly Tyr Trp Glu Gln Thr Met Ser Ala Pro Thr Thr Pro Ser Asp Asp			
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atg gag gcc gtg cta tgc aag gag ttt gcg gat gtg ctt ggc gtc gaa			8064
Met Glu Ala Val Leu Cys Lys Glu Phe Ala Asp Val Leu Gly Val Glu			
2670	2675	2680	
gtc agc gcc acc gac agc ttc ttc gat ctc ggt ggg cat tcc ctc atg			8112
Val Ser Ala Thr Asp Ser Phe Phe Asp Leu Gly Gly His Ser Leu Met			
2685	2690	2695	2700
gct acg aag ctc gct gcg cgt att agc cgt cgg cta gat gta ccg gtg			8160
Ala Thr Lys Leu Ala Ala Arg Ile Ser Arg Arg Leu Asp Val Pro Val			
2705	2710	2715	
tca atc aaa gac ata ttc gat cac tca gtt cct cta aac ctt gcg agg			8208
Ser Ile Lys Asp Ile Phe Asp His Ser Val Pro Leu Asn Leu Ala Arg			
2720	2725	2730	
aag att cgg ctc act caa gca aaa ggc cac gaa gcg acc aat gga gta			8256
Lys Ile Arg Leu Thr Gln Ala Lys Gly His Glu Ala Thr Asn Gly Val			
2735	2740	2745	
caa atc gcc aac gac gcc cca ttc caa ctc att tcc gta gaa gat cca			8304
Gln Ile Ala Asn Asp Ala Pro Phe Gln Leu Ile Ser Val Glu Asp Pro			
2750	2755	2760	
gag ata ttc gtc caa cgt gaa atc gcc cct caa cta caa tgc tca ccc			8352
Glu Ile Phe Val Gln Arg Glu Ile Ala Pro Gln Leu Gln Cys Ser Pro			
2765	2770	2775	2780
gag aca atc cta gac gtc tac ccc gcc acg caa atg caa agg gtc ttc			8400
Glu Thr Ile Leu Asp Val Tyr Pro Ala Thr Gln Met Gln Arg Val Phe			
2785	2790	2795	

ctc ctc aac cca gta aca gga aag ccg cgc tca cca acg cca ttt cac	8448
Leu Leu Asn Pro Val Thr Gly Lys Pro Arg Ser Pro Thr Pro Phe His	
2800 2805 2810	
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Ile Asp Phe Pro Pro Asp Ala Asp Cys Ala Ser Leu Met Arg Ala Cys	
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Ala Ser Leu Ala Lys His Phe Asp Ile Phe Arg Thr Val Phe Leu Glu	
2830 2835 2840	
gcc aga ggc gaa ctc tac caa gta gtt cta aaa cac gtc gac gtg ccc	8592
Ala Arg Gly Glu Leu Tyr Gln Val Val Leu Lys His Val Asp Val Pro	
2845 2850 2855 2860	
atc gag atg ctc cag acc gaa gaa aac atc aac agc gcg acc cgg tcg	8640
Ile Glu Met Leu Gln Thr Glu Glu Asn Ile Asn Ser Ala Thr Arg Ser	
2865 2870 2875	
ttc ctg gac gta gac gca gaa aaa ccc atc cgg cta ggc cag cca ctg	8688
Phe Leu Asp Val Asp Ala Glu Lys Pro Ile Arg Leu Gly Gln Pro Leu	
2880 2885 2890	
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Ile Arg Ile Ala Ile Leu Glu Lys Pro Gly Ser Thr Leu Arg Val Ile	
2895 2900 2905	
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Leu Arg Leu Ser His Ala Leu Tyr Asp Gly Leu Ser Leu Glu His Ile	
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Leu His Ser Leu His Ile Leu Phe Phe Gly Gly Ser Leu Pro Pro Pro	
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ccc aag ttc gcc ggg tac atg caa cac gtc gcg agc agt cgc aga gaa	8880
Pro Lys Phe Ala Gly Tyr Met Gln His Val Ala Ser Ser Arg Arg Glu	
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Gly Tyr Asp Phe Trp Arg Ser Val Leu Arg Asp Ser Ser Met Thr Val	
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Ile Lys Gly Asn Asn Asn Thr Thr Pro Pro Pro Pro Pro Gln Gln Gln	
2975 2980 2985	
tcc acc ccc tcc gga gcc cac cac gcc tcc aaa gta gtc act atc cca	9024
Ser Thr Pro Ser Gly Ala His His Ala Ser Lys Val Val Thr Ile Pro	
2990 2995 3000	
acc caa gcc aac aca gac agc cgg atc acg cgc gcc acg atc ttc act	9072
Thr Gln Ala Asn Thr Asp Ser Arg Ile Thr Arg Ala Thr Ile Phe Thr	
3005 3010 3015 3020	
acc gct tgc gca cta atg ctc gcg aaa gaa gac aac tcc agc gac gtc	9120

Thr Ala Cys Ala Leu Met Leu Ala Lys Glu Asp Asn Ser Ser Asp Val
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 Val Phe Gly Arg Thr Val Ser Gly Arg Gln Gly Leu Pro Leu Ala His
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 Gln Asn Val Ile Gly Pro Cys Leu Asn Gln Val Pro Val Arg Ala Arg
 3055 3060 3065
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 Gly Leu Asn Arg Gly Thr His His Arg Glu Leu Leu Arg Glu Met
 3070 3075 3080
 caa gag caa tat ctc aac agt ctc gct ttc gaa act ctc ggg tac gac 9312
 Gln Glu Gln Tyr Leu Asn Ser Leu Ala Phe Glu Thr Leu Gly Tyr Asp
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 gag atc aag gcg cac tgc aca gac tgg ccg gac gtg cca gcg acc gcg 9360
 Glu Ile Lys Ala His Cys Thr Asp Trp Pro Asp Val Pro Ala Thr Ala
 3105 3110 3115
 agc ttc ggg tgc tgc atc gtg tac cag aac ttc gat tcg cac ccg gac 9408
 Ser Phe Gly Cys Cys Ile Val Tyr Gln Asn Phe Asp Ser His Pro Asp
 3120 3125 3130
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 Ser Arg Val Glu Glu Gln Arg Leu Gln Ile Gly Val Leu Ser Arg Asn
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 tac gag gct att aat gag ggg ctc gtg cat gat ctt gtt att gct ggg 9504
 Tyr Glu Ala Ile Asn Glu Gly Leu Val His Asp Leu Val Ile Ala Gly
 3150 3155 3160
 gag tcg gag cct gat ggg gat gat ttg agg gtt act gtt gtg gcg aat 9552
 Glu Ser Glu Pro Asp Gly Asp Asp Leu Arg Val Thr Val Val Ala Asn
 3165 3170 3175 3180
 cgg agg ttg tgc gat gag gaa agg ttg aag agg atg ctg gag gag ctg 9600
 Arg Arg Leu Cys Asp Glu Glu Arg Leu Lys Arg Met Leu Glu Glu Leu
 3185 3190 3195
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 Cys Gly Asn Ile Arg Ala Leu Ala Leu Val
 3200 3205

<210> 2
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			20					25					30				
Asp	Asn	Leu	Tyr	Glu	Gln	Ala	Thr	Arg	His	Phe	Gly	Leu	Ser	Arg	Asp		
		35					40					45					
Lys	Ile	Glu	Asn	Val	Leu	Pro	Cys	Thr	Ser	Phe	Gln	Cys	Asp	Val	Ile		
	50					55					60						
Asp	Cys	Ala	Val	Asp	Asp	Arg	Arg	His	Ala	Ile	Gly	His	Val	Val	Tyr		
65					70					75					80		
Asp	Ile	Pro	Asn	Thr	Val	Asp	Ile	Gln	Arg	Leu	Ala	Ala	Ala	Trp	Lys		
				85				90						95			
Glu	Val	Val	Arg	Gln	Thr	Pro	Ile	Leu	Arg	Thr	Gly	Ile	Phe	Thr	Ser		
			100					105					110				
Glu	Thr	Gly	Asp	Ser	Phe	Gln	Ile	Val	Leu	Lys	Glu	Gly	Cys	Leu	Pro		
		115					120					125					
Trp	Met	Tyr	Ala	Thr	Cys	Leu	Gly	Met	Lys	Gly	Ala	Val	Ile	Gln	Asp		
	130					135					140						
Glu	Ala	Val	Ala	Ala	Met	Thr	Gly	Pro	Arg	Cys	Asn	Arg	Tyr	Val	Val		
145					150					155					160		
Leu	Glu	Asp	Pro	Ser	Thr	Lys	Gln	Arg	Leu	Leu	Ile	Trp	Thr	Phe	Ser		
				165					170					175			
His	Ala	Leu	Val	Asp	Tyr	Thr	Val	Gln	Glu	Arg	Ile	Leu	Gln	Arg	Val		
			180					185					190				
Leu	Thr	Val	Tyr	Asp	Gly	Arg	Asp	Val	Glu	Cys	Pro	Arg	Ile	Lys	Asp		
		195					200					205					
Thr	Glu	His	Val	Ser	Arg	Phe	Trp	Gln	Gln	His	Phe	Glu	Gly	Leu	Asp		
	210					215					220						
Ala	Ser	Val	Phe	Pro	Leu	Leu	Pro	Ser	His	Leu	Thr	Val	Cys	Asn	Pro		
225					230					235					240		
Asn	Ala	Arg	Ala	Glu	His	His	Ile	Ser	Tyr	Thr	Gly	Pro	Val	Gln	Arg		
				245					250					255			
Lys	Trp	Ser	His	Thr	Ser	Ile	Cys	Arg	Ala	Ala	Leu	Ala	Val	Leu	Leu		
			260					265					270				
Ser	Arg	Phe	Thr	His	Ser	Ser	Glu	Ala	Leu	Phe	Gly	Val	Val	Thr	Glu		
		275					280					285					
Gln	Ser	His	Asn	Ser	Glu	Asp	Gln	Arg	Arg	Ser	Ile	Asp	Gly	Pro	Ala		
	290					295					300						
Arg	Thr	Val	Val	Pro	Ile	Arg	Val	Leu	Cys	Ala	Pro	Asp	Gln	Tyr	Val		
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Ser Asp Val Ile Gly Ala Ile Thr Ala His Glu His Ala Met Arg Gly
 325 330 335
 Phe Glu His Ala Gly Leu Arg Asn Ile Arg Arg Thr Gly Asp Asp Gly
 340 345 350
 Ser Ala Ala Cys Gly Phe Gln Thr Val Leu Leu Val Thr Asp Gly Asp
 355 360 365
 Ala Pro Lys Thr Pro Gly Ser Val Leu His Arg Ser Val Glu Glu Ser
 370 375 380
 Asp Arg Phe Met Pro Cys Ala Asn Arg Ala Leu Leu Leu Asp Cys Gln
 385 390 395 400
 Met Ala Gly Asn Ser Ala Ser Leu Val Ala Arg Tyr Asp His Asn Val
 405 410 415
 Ile Asp Pro Arg Gln Met Ser Arg Phe Leu Arg Gln Leu Gly Tyr Leu
 420 425 430
 Ile Gln Gln Phe His His His Val Asp Leu Pro Leu Val Lys Glu Leu
 435 440 445
 Asp Val Val Thr Ala Glu Asp Cys Ala Glu Ile Glu Lys Trp Asn Ser
 450 455 460
 Glu Arg Leu Thr Met Gln Asp Ala Leu Ile His Asp Thr Ile Ser Lys
 465 470 475 480
 Trp Ala Ala Gly Asp Pro Asn Lys Ala Ala Val Phe Ala Trp Asp Gly
 485 490 495
 Glu Trp Thr Tyr Ala Glu Leu Asp Asn Ile Ser Ser Arg Leu Ala Val
 500 505 510
 Tyr Ile Gln Ser Leu Asp Leu Arg Pro Gly Gln Ala Ile Leu Pro Leu
 515 520 525
 Cys Phe Glu Lys Ser Lys Trp Val Val Ala Thr Ile Leu Ala Val Leu
 530 535 540
 Lys Val Gly Arg Ala Phe Thr Leu Ile Asp Pro Cys Asp Pro Ser Ala
 545 550 555 560
 Arg Met Ala Gln Val Cys Gln Gln Thr Ser Ala Thr Val Ala Leu Thr
 565 570 575
 Ser Lys Leu His Asn Thr Thr Leu Arg Ser Val Val Ser Arg Cys Ile
 580 585 590
 Val Val Asp Asp Asp Leu Leu Arg Ser Leu Pro His Ala Asp Gly Arg
 595 600 605
 Leu Lys Ala Thr Val Lys Pro Gln Asp Leu Ala Tyr Val Ile Phe Thr
 610 615 620

Ser Gly Ser Thr Gly Glu Pro Lys Gly Ile Met Ile Glu His Arg Gly
 625 630 635 640
 Phe Val Ser Cys Ala Met Lys Phe Gly Pro Ala Leu Gly Met Asp Glu
 645 650 655
 His Thr Arg Ala Leu Gln Phe Ala Ser Tyr Ala Phe Gly Ala Cys Leu
 660 665 670
 Val Glu Val Val Thr Ala Leu Met His Gly Gly Cys Val Cys Ile Pro
 675 680 685
 Ser Asp Asp Asp Arg Leu Asn Asn Val Pro Glu Phe Ile Lys Arg Ala
 690 695 700
 Gln Val Asn Trp Val Ile Leu Thr Pro Ser Tyr Ile Gly Thr Phe Gln
 705 710 715 720
 Pro Glu Asp Val Pro Gly Leu Gln Thr Leu Val Leu Val Gly Glu Pro
 725 730 735
 Ile Ser Ala Ser Ile Arg Asp Thr Trp Ala Ser Gln Val Arg Leu Leu
 740 745 750
 Asn Ala Tyr Gly Gln Ser Glu Ser Ser Thr Met Cys Ser Val Thr Glu
 755 760 765
 Val Ser Pro Leu Ser Leu Glu Pro Asn Asn Ile Gly Arg Ala Val Gly
 770 775 780
 Ala Arg Ser Trp Ile Ile Asp Pro Asp Glu Pro Asp Arg Leu Ala Pro
 785 790 795 800
 Ile Gly Cys Ile Gly Glu Leu Val Ile Glu Ser Pro Gly Ile Ala Arg
 805 810 815
 Asp Tyr Ile Ile Ala Pro Pro Pro Asp Lys Ser Pro Phe Leu Leu Ala
 820 825 830
 Pro Pro Ala Trp Tyr Pro Ala Gly Lys Leu Ser Asn Ala Phe Lys Phe
 835 840 845
 Tyr Lys Thr Gly Asp Leu Val Arg Tyr Gly Pro Asp Gly Thr Ile Val
 850 855 860
 Cys Leu Gly Arg Lys Asp Ser Gln Val Lys Ile Arg Gly Gln Arg Val
 865 870 875 880
 Glu Ile Ser Ala Val Glu Ala Ser Leu Arg Arg Gln Leu Pro Ser Asp
 885 890 895
 Ile Met Pro Val Ala Glu Ala Ile Lys Arg Ser Asp Ser Ser Gly Ser
 900 905 910
 Thr Val Leu Thr Ala Phe Leu Ile Gly Ser Ser Lys Ser Gly Asp Gly
 915 920 925

Asn Gly His Ala Leu Ser Ala Ala Asp Ala Val Ile Leu Asp His Gly
 930 935 940
 Ala Thr Asn Glu Ile Asn Ala Lys Leu Gln Gln Ile Leu Pro Gln His
 945 950 955 960
 Ser Val Pro Ser Tyr Tyr Ile His Met Glu Asn Leu Pro Arg Thr Ala
 965 970 975
 Thr Gly Lys Ala Asp Arg Lys Met Leu Arg Ser Ile Ala Ser Lys Leu
 980 985 990
 Leu Gly Glu Leu Ser Gln Asn Val Thr Ser Gln Pro Ile Glu Lys His
 995 1000 1005
 Asp Ala Pro Ala Thr Gly Ile Glu Val Lys Leu Lys Glu Leu Trp Phe
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 Pro Thr Leu Ala Gly Leu Val Asp Val Ile Gly Arg Asp Pro Ala Pro
 1075 1080 1085
 Tyr Asn Leu Ile Pro Thr Thr Ala Tyr Ser Gly Pro Val Glu Gln Ser
 1090 1095 1100
 Phe Ala Gln Gly Arg Leu Trp Phe Leu Asp Gln Ile Glu Leu Asp Ala
 1105 1110 1115 1120
 Leu Trp Tyr Leu Leu Pro Tyr Ala Val Arg Met Arg Gly Pro Leu His
 1125 1130 1135
 Ile Asp Ala Leu Thr Ile Ala Leu Leu Ala Ile Gln Gln Arg His Glu
 1140 1145 1150
 Thr Leu Arg Thr Thr Phe Glu Glu Gln Asp Gly Val Gly Val Gln Val
 1155 1160 1165
 Val His Ala Ser Pro Ile Ser Asp Leu Arg Ile Ile Asp Val Ser Gly
 1170 1175 1180
 Asp Arg Asn Ser Asp Tyr Leu Gln Leu Leu His Gln Glu Gln Thr Thr
 1185 1190 1195 1200
 Pro Phe Ile Leu Ala Cys Gln Ala Gly Trp Arg Val Ser Leu Ile Arg
 1205 1210 1215
 Leu Gly Glu Asp Asp His Ile Leu Ser Ile Val Met His His Ile Ile
 1220 1225 1230

Ser Asp Gly Trp Ser Ile Asp Ile Leu Arg Arg Glu Leu Ser Asn Phe
 1235 1240 1245
 Tyr Ser Ala Ala Leu Arg Gly Ser Asp Pro Leu Ser Val Val Ser Pro
 1250 1255 1260
 Leu Pro Leu His Tyr Arg Asp Phe Ser Val Trp Gln Lys Gln Val Glu
 1265 1270 1275 1280
 Gln Glu Thr Glu His Glu Arg Gln Leu Glu Tyr Trp Val Lys Gln Leu
 1285 1290 1295
 Ala Asp Ser Ser Ala Ala Glu Phe Leu Thr Asp Phe Pro Arg Pro Asn
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 Ile Leu Ser Gly Glu Ala Gly Ser Val Pro Val Thr Ile Glu Gly Glu
 1315 1320 1325
 Leu Tyr Glu Arg Leu Gln Glu Phe Cys Lys Val Glu Gln Met Thr Pro
 1330 1335 1340
 Phe Ala Val Leu Leu Gly Ala Phe Arg Ala Thr His Tyr Arg Leu Thr
 1345 1350 1355 1360
 Gly Ala Glu Asp Ser Ile Ile Gly Thr Pro Ile Ala Asn Arg Asn Arg
 1365 1370 1375
 Gln Glu Leu Glu Asn Met Ile Gly Phe Phe Val Asn Thr Gln Cys Met
 1380 1385 1390
 Arg Ile Thr Val Asp Gly Asp Asp Thr Phe Glu Ser Leu Val Arg Gln
 1395 1400 1405
 Val Arg Thr Thr Ala Thr Ala Ala Phe Glu His Gln Asp Val Pro Phe
 1410 1415 1420
 Glu Arg Val Val Thr Ala Leu Leu Pro Arg Ser Arg Asp Leu Ser Arg
 1425 1430 1435 1440
 Asn Pro Leu Ala Gln Leu Thr Phe Ala Leu His Ser Gln Gln Asp Leu
 1445 1450 1455
 Gly Lys Phe Glu Leu Glu Gly Leu Val Ala Glu Pro Val Ser Asn Lys
 1460 1465 1470
 Val Tyr Thr Arg Phe Asp Val Glu Phe His Leu Phe Gln Glu Ala Gly
 1475 1480 1485
 Arg Leu Ser Gly Asn Val Ala Phe Ala Ala Asp Leu Phe Lys Pro Glu
 1490 1495 1500
 Thr Ile Ser Asn Val Val Ala Ile Phe Phe Gln Ile Leu Arg Gln Gly
 1505 1510 1515 1520
 Ile Arg Gln Pro Arg Thr Pro Ile Ala Val Leu Pro Leu Thr Asp Gly
 1525 1530 1535

Leu Ala Asp Leu Arg Ala Met Gly Leu Leu Glu Ile Glu Lys Ala Glu
 1540 1545 1550
 Tyr Pro Arg Glu Ser Ser Val Val Asp Val Phe Arg Lys Gln Val Ala
 1555 1560 1565
 Ala His Pro His Ala Phe Ala Val Val Asp Ser Ala Ser Arg Leu Thr
 1570 1575 1580
 Tyr Ala Asp Leu Asp Arg Gln Ser Asp Gln Leu Ala Thr Trp Leu Gly
 1585 1590 1595 1600
 Arg Arg Asn Met Thr Ala Glu Thr Leu Val Gly Val Leu Ala Pro Arg
 1605 1610 1615
 Ser Cys Gln Thr Val Val Ala Ile Leu Gly Ile Leu Lys Ala Asn Leu
 1620 1625 1630
 Ala Tyr Leu Pro Leu Asp Val Asn Cys Pro Thr Ala Arg Leu Gln Thr
 1635 1640 1645
 Ile Leu Ser Thr Leu Asn Arg His Lys Leu Val Leu Leu Gly Ser Asn
 1650 1655 1660
 Ala Thr Thr Pro Asp Val Gln Ile Pro Asp Val Glu Leu Val Arg Ile
 1665 1670 1675 1680
 Ser Asp Ile Leu Asp Arg Pro Ile Asn Gly Gln Ala Lys Leu Asn Gly
 1685 1690 1695
 His Thr Lys Ser Asn Gly Tyr Ser Lys Pro Asn Gly Tyr Thr His Leu
 1700 1705 1710
 Lys Gly Tyr Ser Asn Leu Asn Gly Tyr Ser Lys Gln Asn Gly Tyr Ala
 1715 1720 1725
 Gln Leu Asn Gly His Arg Glu Arg Asn Asn Tyr Leu Asp Leu Asn Gly
 1730 1735 1740
 His Ser Leu Leu Asn Gly Asn Ser Asp Ile Thr Thr Ser Gly Pro Ser
 1745 1750 1755 1760
 Ala Thr Ser Leu Ala Tyr Val Ile Phe Thr Ser Gly Ser Thr Gly Lys
 1765 1770 1775
 Pro Lys Gly Val Met Val Glu His Arg Ser Ile Ile Arg Leu Ala Lys
 1780 1785 1790
 Lys Asn Arg Ile Ile Ser Arg Phe Pro Ser Val Ala Lys Val Ala His
 1795 1800 1805
 Leu Ser Asn Ile Ala Phe Asp Ala Ala Thr Trp Glu Met Phe Ala Ala
 1810 1815 1820
 Leu Leu Asn Gly Gly Thr Leu Val Cys Ile Asp Tyr Met Thr Thr Leu
 1825 1830 1835 1840

Asp Ser Lys Thr Leu Glu Ala Ala Phe Ala Arg Glu Gln Ile Asn Ala
 1845 1850 1855
 Ala Leu Leu Thr Pro Ala Leu Leu Lys Gln Cys Leu Ala Asn Ile Pro
 1860 1865 1870
 Thr Thr Leu Gly Arg Leu Ser Ala Leu Val Ile Gly Gly Asp Arg Leu
 1875 1880 1885
 Asp Gly Gln Asp Ala Ile Ala Ala His Ala Leu Val Gly Ala Gly Val
 1890 1895 1900
 Tyr Asn Ala Tyr Gly Pro Thr Glu Asn Gly Val Ile Ser Thr Ile Tyr
 1905 1910 1915 1920
 Asn Ile Thr Lys Asn Asp Ser Phe Ile Asn Gly Val Pro Ile Gly Cys
 1925 1930 1935
 Ala Ile Ser Asn Ser Gly Ala Tyr Ile Thr Asp Pro Asp Gln Gln Leu
 1940 1945 1950
 Val Pro Pro Gly Val Met Gly Glu Leu Val Val Thr Gly Asp Gly Leu
 1955 1960 1965
 Ala Arg Gly Tyr Thr Asp Pro Ala Leu Asp Ala Gly Arg Phe Val Gln
 1970 1975 1980
 Ile Met Ile Asn Asp Lys Ala Val Arg Ala Tyr Arg Thr Gly Asp Arg
 1985 1990 1995 2000
 Ala Arg Tyr Arg Val Gly Asp Gly Gln Ile Glu Phe Phe Gly Arg Met
 2005 2010 2015
 Asp Gln Gln Val Lys Ile Arg Gly His Arg Ile Glu Pro Ala Glu Val
 2020 2025 2030
 Glu Arg Ala Ile Leu Asp Gln Asp Ser Ala Arg Asp Ala Val Val Val
 2035 2040 2045
 Ile Arg His Gln Glu Gly Glu Glu Pro Glu Met Val Gly Phe Val Ala
 2050 2055 2060
 Thr His Gly Asp His Ser Ala Glu Gln Glu Glu Ala Asp Asp Gln Val
 2065 2070 2075 2080
 Glu Gly Trp Lys Asp Phe Phe Glu Ser Asn Thr Tyr Ala Asp Met Asp
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 Thr Ile Gly Gln Ser Ala Ile Gly Asn Asp Phe Thr Gly Trp Thr Ser
 2100 2105 2110
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 2115 2120 2125
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 Gly Leu Gln Ser Tyr Val Gly Leu Glu Pro Ser Arg Ser Ala Ala Thr
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 Phe Val Thr Lys Ala Ile Asn Ser Thr Pro Ala Leu Ala Gly Lys Ala
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 Glu Val His Val Gly Thr Ala Thr Asp Ile Asn Arg Leu Arg Gly Leu
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 Val Lys Arg Val Val Phe Gly Asp Ile Arg Ser His Ala Thr Asn Arg
 2245 2250 2255
 His Phe Leu Ala Ala Arg Ala Leu His Ser Leu Gly Ser Lys Ala Thr
 2260 2265 2270
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 2275 2280 2285
 Glu Leu Leu Val Asp Pro Ala Phe Phe Thr Ala Leu Leu Gln Gly Gln
 2290 2295 2300
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 2305 2310 2315 2320
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 2325 2330 2335
 Arg Gly Pro Glu Glu Gln Ser Arg Pro Val Tyr Pro Ile Gln Val Asn
 2340 2345 2350
 Asp Trp Ile Asp Phe Gln Ala Ser Arg Ile Asp Arg Arg Ala Leu Leu
 2355 2360 2365
 Arg Leu Leu Gln Arg Ser Ala Asp Ala Ala Thr Val Ala Val Ser Asn
 2370 2375 2380
 Ile Pro Tyr Ser Lys Thr Ile Val Glu Arg His Val Val Glu Ser Leu
 2385 2390 2395 2400
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 Trp Ile Ser Ala Val Arg Ser Lys Ala Glu Arg Cys Thr Ser Leu Ser
 2420 2425 2430
 Val Thr Asp Leu Val Gln Leu Gly Glu Glu Ala Gly Phe Arg Val Glu
 2435 2440 2445

Val Ser Ala Ala Arg Gln Trp Ser Gln Ser Gly Ala Leu Asp Ala Val
 2450 2455 2460
 Phe His Arg Tyr Asn Leu Pro Thr Gln Ser Asn Ser Arg Val Leu Ile
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 Gln Phe Pro Thr Glu Asp Gly Gln Thr Arg Arg Ser Ala Thr Leu Thr
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 2515 2520 2525
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 2530 2535 2540
 Arg Lys Glu Leu Thr Arg Arg Ala Gln Ile Ala Pro Lys Ser Gln Ala
 2545 2550 2555 2560
 Ala Pro Ala Lys Pro Val Lys Gln Val Asp Pro Phe Val Asn Leu Glu
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 Val Asn Asp His Phe Phe Gln Leu Gly Gly His Ser Leu Leu Ala Thr
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 2610 2615 2620
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 Arg Gln Gly Leu Thr Leu Glu Asn Ala Ile Pro Ala Thr Pro Asp Ser
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 Gly Tyr Trp Glu Gln Thr Met Ser Ala Pro Thr Thr Pro Ser Asp Asp
 2660 2665 2670
 Met Glu Ala Val Leu Cys Lys Glu Phe Ala Asp Val Leu Gly Val Glu
 2675 2680 2685
 Val Ser Ala Thr Asp Ser Phe Phe Asp Leu Gly Gly His Ser Leu Met
 2690 2695 2700
 Ala Thr Lys Leu Ala Ala Arg Ile Ser Arg Arg Leu Asp Val Pro Val
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 Ser Ile Lys Asp Ile Phe Asp His Ser Val Pro Leu Asn Leu Ala Arg
 2725 2730 2735
 Lys Ile Arg Leu Thr Gln Ala Lys Gly His Glu Ala Thr Asn Gly Val
 2740 2745 2750

Gln Ile Ala Asn Asp Ala Pro Phe Gln Leu Ile Ser Val Glu Asp Pro
 2755 2760 2765
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 2770 2775 2780
 Glu Thr Ile Leu Asp Val Tyr Pro Ala Thr Gln Met Gln Arg Val Phe
 2785 2790 2795 2800
 Leu Leu Asn Pro Val Thr Gly Lys Pro Arg Ser Pro Thr Pro Phe His
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 Ile Asp Phe Pro Pro Asp Ala Asp Cys Ala Ser Leu Met Arg Ala Cys
 2820 2825 2830
 Ala Ser Leu Ala Lys His Phe Asp Ile Phe Arg Thr Val Phe Leu Glu
 2835 2840 2845
 Ala Arg Gly Glu Leu Tyr Gln Val Val Leu Lys His Val Asp Val Pro
 2850 2855 2860
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 2865 2870 2875 2880
 Phe Leu Asp Val Asp Ala Glu Lys Pro Ile Arg Leu Gly Gln Pro Leu
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 Ile Arg Ile Ala Ile Leu Glu Lys Pro Gly Ser Thr Leu Arg Val Ile
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 Leu His Ser Leu His Ile Leu Phe Phe Gly Gly Ser Leu Pro Pro Pro
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 Pro Lys Phe Ala Gly Tyr Met Gln His Val Ala Ser Ser Arg Arg Glu
 2945 2950 2955 2960
 Gly Tyr Asp Phe Trp Arg Ser Val Leu Arg Asp Ser Ser Met Thr Val
 2965 2970 2975
 Ile Lys Gly Asn Asn Asn Thr Thr Pro Pro Pro Pro Pro Gln Gln Gln
 2980 2985 2990
 Ser Thr Pro Ser Gly Ala His His Ala Ser Lys Val Val Thr Ile Pro
 2995 3000 3005
 Thr Gln Ala Asn Thr Asp Ser Arg Ile Thr Arg Ala Thr Ile Phe Thr
 3010 3015 3020
 Thr Ala Cys Ala Leu Met Leu Ala Lys Glu Asp Asn Ser Ser Asp Val
 3025 3030 3035 3040
 Val Phe Gly Arg Thr Val Ser Gly Arg Gln Gly Leu Pro Leu Ala His
 3045 3050 3055

Gln Asn Val Ile Gly Pro Cys Leu Asn Gln Val Pro Val Arg Ala Arg
 3060 3065 3070
 Gly Leu Asn Arg Gly Thr Thr His His Arg Glu Leu Leu Arg Glu Met
 3075 3080 3085
 Gln Glu Gln Tyr Leu Asn Ser Leu Ala Phe Glu Thr Leu Gly Tyr Asp
 3090 3095 3100
 Glu Ile Lys Ala His Cys Thr Asp Trp Pro Asp Val Pro Ala Thr Ala
 3105 3110 3115 3120
 Ser Phe Gly Cys Cys Ile Val Tyr Gln Asn Phe Asp Ser His Pro Asp
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 Ser Arg Val Glu Glu Gln Arg Leu Gln Ile Gly Val Leu Ser Arg Asn
 3140 3145 3150
 Tyr Glu Ala Ile Asn Glu Gly Leu Val His Asp Leu Val Ile Ala Gly
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 Glu Ser Glu Pro Asp Gly Asp Asp Leu Arg Val Thr Val Val Ala Asn
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 Arg Arg Leu Cys Asp Glu Glu Arg Leu Lys Arg Met Leu Glu Glu Leu
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Concensus Sequence

<400> 3
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 1 5

<210> 4
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Concensus Sequence

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 1 5

<210> 5
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

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<222> (6)
<223> n = a, g, c or t

<220>
<221> base
<222> (7)
<223> w = a or t

<220>
<221> base
<223> (8)
<223> s = g or c

<220>
<221> base
<222> (9)
<223> n = a, g, c or t

<220>
<221> base
<222> (15)
<223> y = t or c

<220>
<221> base
<222> (18)
<223> y = t or c

<400> 5
tggacnwsna tgtaygaygg

20

<210> 6
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

<220>
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<222> (3)
<223> n = a, g, c or t

<220>
<221> base
<222> (6)
<223> r = g or a

<220>
<221> base
<222> (9)
<223> r = g or a

<220>
<221> base
<222> (12)
<223> y = t or c

<220>
<221> base
<222> (15)
<223> n = a, g, c or t

<220>
<221> base
<222> (18)
<223> n = a, g, c or t

<400> 6
gtnggraart aytgnacnac

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<210> 7
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

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<210> 8
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

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<210> 9
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<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

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 <210> 11
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

 <400> 11
 agcatcggat cctaacaatg tcaaacatgg caccactccc ta 42

 <210> 12
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

 <400> 12
 gcatcgcgat actagagaag 20

 <210> 13
 <211> 42
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide

Synthetase Gene

<400> 13
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<210> 14
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<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer for Abp1 Gene

<400> 14
ctcaaaccag gaactctttc 20

<210> 15
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for Abp1 Gene

<400> 15
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<210> 16
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer for Abp1 Gene

<400> 16
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<210> 17
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<212> DNA
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<220>
<223> Description of Artificial Sequence:Primer for Abp1 Gene

<400> 17
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<210> 18
<211> 27
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for Abp1 Gene

<400> 18

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27

<210> 19

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for Abp1 Gene

<400> 19

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29

<210> 20

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for Abp 1 Gene Promoter

<400> 20

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20

<210> 21

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for Cyclic Depsipeptide Synthetase Gene

<400> 21

gcacaacctc tttccaggct

20